

WHAT IS CLAIMED IS:

1. A positive-working radiation-sensitive composition comprising

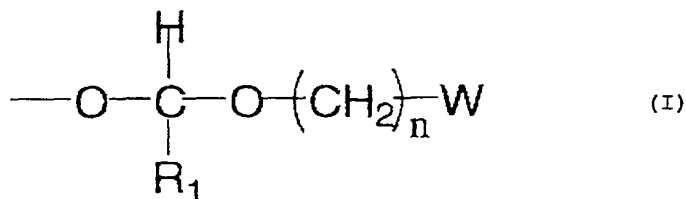
(a) a resin having an acid-decomposing group represented by the following formula (I), which is decomposed by the action of an acid to increase the solubility in an alkali developer,

(b-1) at least one kind of compounds each generates an acid by the irradiation of an active light or radiation and contributes to the decomposition reaction of the above-described acid-decomposing group,

(b-2) at least one kind of compounds each generates an acid by the irradiation of an active light or radiation but does not contribute to the decomposition reaction of the above-described acid-decomposing group,

(c) a surface active agent, and

(d) a solvent;

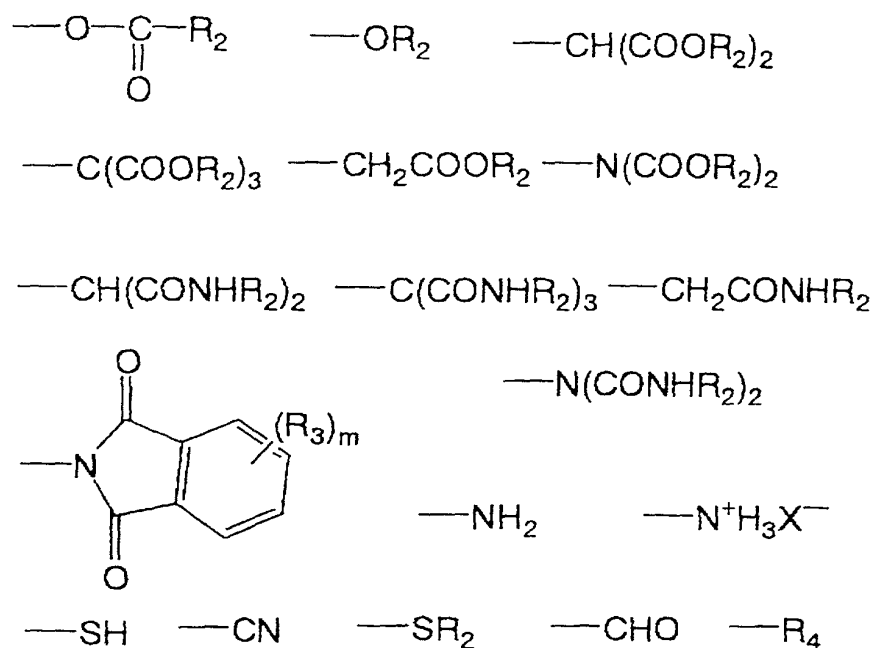


wherein, R_1 represents an alkyl group having from 1 to 4 carbon atoms; W represents an organic group containing at least one kind of atom selected from the group consisting of an oxygen atom, a nitrogen atom, a sulfur atom, a phosphorus atom, and

a silicon atom, and at least one carbon atom, an amino group, an ammonium group, a mercapto group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted cyclic alkyl group; and n represents an integer of from 1 to 4.

2. The positive-working radiation-sensitive composition according to claim 1, wherein the above-described resin (a) is a resin in which at least a part of a phenolic hydroxy group of an alkali-soluble resin having the phenolic hydroxy group is protected by the acid-decomposing group shown by the above-described formula (I).

3. The positive-working radiation-sensitive composition according to claim 1, wherein W of the above-described formula (I) is at least one kind of a substituent selected from the group of the substituents shown below;



in the formulae, R_2 represents a straight chain, branched or cyclic alkyl group having from 1 to 6 carbon atoms, a straight chain, branched, or cyclic alkenyl group having from 2 to 6 carbon atoms, a substituted or unsubstituted aryl group, or a substituted or unsubstituted aralkyl group; R_3 represents a hydrogen atom, a straight chain, branched or cyclic alkyl group having from 1 to 6 carbon atoms, a straight chain, branched or cyclic alkoxy group having from 1 to 6 carbon atoms, a halogen atom, a nitro group, an amino group, a hydroxy group, or a cyano group; X represents a halogen atom; R_4 represents a substituted or unsubstituted aryl group or a substituted or unsubstituted cyclic alkyl group having from 3 to 15 carbon atoms; and m represents a natural number of from 1 to 4.

4. The positive-working radiation-sensitive composition according to claim 1, wherein the compound (b-1) is a compound generating a sulfonic acid by the irradiation of an active light or radiation and the compound (b-2) is a compound generating a carboxylic acid by the irradiation of an active light or radiation.

5. The positive-working radiation-sensitive composition according to claim 1, wherein the composition further contains an organic basic compound.

6. The positive-working radiation-sensitive composition according to claim 1, wherein a phenolic hydroxy group of the resin (a) is protected by the acid-decomposing group of formula (I) in a ratio of from 5 to 45 mol%.

7. The positive-working radiation-sensitive composition according to claim 1, wherein a phenolic hydroxy group of the resin (a) is protected by the acid-decomposing group of formula (I) in a ratio of from 10 to 30 mol%.

8. The positive-working radiation-sensitive composition according to claim 1, wherein the amount of the resin (a) is from 10 to 99.9% by weight based on the total weight excluding a solvent of the composition.

9. The positive-working radiation-sensitive composition according to claim 1, wherein the amount of the resin (a) is from 50 to 99.5% by weight based on the total weight excluding a solvent of the composition.

10. The positive-working radiation-sensitive composition according to claim 1, wherein the amount of the resin (a) is from 70 to 99.0% by weight based on the total weight of the composition excluding the solvent.

11. The positive-working radiation-sensitive composition according to claim 1, wherein the composition further contains an alkali-soluble resin without containing the acid-decomposing group.

12. The positive-working radiation-sensitive composition according to claim 1, wherein the amount of the component (b-1) is from 0.001 to 40% by weight based on the total weight of the composition excluding the solvent.

13. The positive-working radiation-sensitive composition according to claim 1, wherein the amount of the component (b-1) is from 0.01 to 20% by weight based on the total weight of the composition excluding the solvent.

14. The positive-working radiation-sensitive composition according to claim 1, wherein the amount of the component (b-1) is from 0.1 to 5% by weight based on the total weight of the composition excluding the solvent.

15. The positive-working radiation-sensitive composition according to claim 1, wherein the amount of the component (b-2) is from 0.1 to 20% by weight based on the total weight of the composition excluding the solvent.

16. The positive-working radiation-sensitive composition according to claim 1, wherein the amount of the component (b-2) is from 0.5 to 10% by weight based on the total weight of the composition excluding the solvent.

17. The positive-working radiation-sensitive composition according to claim 1, wherein the amount of the component (b-2) is from 1 to 7% by weight based on the total weight of the composition excluding the solvent.

18. The positive-working radiation-sensitive composition according to claim 1, wherein the weight ratio of the components (b-2)/(b-1) is from 0.01 to 5.

19. The positive-working radiation-sensitive composition according to claim 1, wherein the weight ratio of the components (b-2)/(b-1) is from 0.05 to 3.

20. The positive-working radiation-sensitive composition according to claim 1, wherein the weight ratio of the components (b-2)/(b-1) is from 0.1 to 2.